Cover Crops Project, Crop Year 2002

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Cover crop demonstrations were conducted in Allamakee County in the fall of 2002. Crops planted were oats, cereal rye and rye grass. There was an aerial application of oats and cereal rye on soybeans prior to leaf drop and on corn silage prior to harvest (August 30th) and drilled oats, cereal rye and rye grass on corn silage ground after harvest (Sept. 11th). Small plots looked at the advantage of disking prior to drilling.

Results of this year's demonstrations were that aerial application is not a viable option for northeast Iowa due to the hills but may be for the rest of the state. Cereal rye is the most vigorous cover but poses problems such as the need to kill it in the spring, alleopathy reducing corn yields and green color attracting army worms. Oats is the least cost cover crop and does not require killing in the spring, possibly making it the best option. There was no advantage to disking prior to drilling on harvested corn silage ground.

Pack manure did not appear to hinder cover crop growth, and in fact may have enhanced it. There was some evidence that the manure spreader wheel track had a reduced stand, but it was still adequate for erosion control.

Background

The Allamakee County Soil and Water Conservation District conducted cover crop demonstrations at several locations in the fall of 2002. One demonstration was conducted at the Dan Byrnes farm where we completed an aerial application of oats and rye on corn silage ground prior to harvest. There were also small plots of corn silage that was disked and drilled and disked and broadcast with an oats trial and a rye trial.

The second demonstration was conducted at the Stan Straate farm that Paul Link rents on Hwy. 76. This demonstration consisted of oats and rye flown on prior to leaf dropping in soybeans. There were also small plots of simulated aerial application of oats, rye and rye grass at the ½, full and double rate.

The third demonstration was at the Johanningmeir Dairy corn silage field, also on Hwy.76, immediately east of the Straate farm. Here oats, rye and rye grass were no-till drilled after silage harvest. Immediately after drilling pack manure was applied.

According to Commissioner Chairman, Arlyn Fossum, the Conservation District is trying to find a way to stop the excessive erosion they have been seeing, especially on soybean fields and on corn silage ground. "We keep losing our dairy and beef farms which is resulting in steep hills that used to be in hay being farmed with a corn/bean rotation. This rotation, especially the soybeans, is leading to some terrible erosion on our steep hills."

Fossum added that even with the loss of many of dairy farms, the overall number of dairy cattle in the county has remained constant. This means that more cows are being concentrated into fewer operations. One result of this is larger fields being cut for corn silage which results in

virtually no residue being left on the soil surface. "Where everyone used to just cut their ridge tops to fill the silo, we now see whole fields being chopped."

The Conservation District Commissioners decided that one way to stop this erosion would be to plant some cover crops such as oats or rye. "We weren't sure what to plant or at what rate," said Randy Kruger, a Commissioner. "We felt like we needed to demonstrate several crops, planted at different rates, before we could start making recommendations to try cover crops." Kruger added that most people have drilled a small grain before but on soybeans and silage ground drilling can present some problems. "Often the beans are harvested later and the ground can be cool and dry and the same is true of corn silage ground. Silage ground can also be very rough and may require some tillage prior to drilling."

To try to answer some of these questions, the Commissioners worked with Iowa State University (ISU), the ISU Extension Service and the USDA Agricultural Research Service. Brian Lange, ISU Extension Crop Production Specialist, said that flying the cover crop on soybeans just prior to leaf drop would put the seed below the leaves, closer to any available moisture, and may make it catch better. He felt that flying it on before silage and bean harvest would increase the chance of wheel traffic creating more seed to soil contact.

Lynn Stock, another Commissioner, said " If the cover crops look good, we may try to pursue some sort of incentive for farmers to try some on their own ground." He adds that this may be one lower cost alternative to terraces with good conservation benefits. "Another benefit would be that a cover crop will uptake a lot of nutrients so if a farmer is dealing with high soil P levels a cover crop may serve to reduce the soil test levels."

The Allamakee County Soil and Water Conservation District Commissioners pursued funding from several sources and received a grant from the Division of Soil Conservation, Iowa Department of Agriculture and Land Stewardship (IDALS)through the Integrated Farm/Livestock Management Demonstration Program .

Results

The plantings completed were:

Dan Byrnes – aerial application on corn silage ground.
Planted 8/30/02
Oats – 3 bu/ac
Cereal Rye – 2 bu/ac
Silage Harvested – 9/16/02

Straate Farm – aerial application on soybean ground
Planted 8/30/02
Oats – 3 bu/ac
Cereal Rye – 2 bu/ac
Soybeans Harvested – 10/11/02

Johanningmeier Dairy – drilled
Silage Harvested 9/10/02
Planted 9/11/02
Oats – 2 bu/ac
Cereal Rye – 2 bu/ac
Annual Rye – 5#/ac
Pack manure applied – 9/13/02

Straate Farm – small plots broadcast – 9/12/02
See attached for small plot layout
Soybeans Harvested – 10/11/02

Dan Byrnes Small plots – Planted 9/16/02
Silage Harvested 9/15/02

Costs – Oats - $5.65/bu
Cereal Rye - $9.00/bu
Annual Rye - $1.07/lb.

All demonstrations showed good growth. The emergence from the aerial applications was not as even as the drilled trials. Unfortunately, in northeast Iowa the aerial application is not a viable option for all producers. The pilot that applied it said that in most of Iowa they can land and take off on a gravel road to reload seed, and they can carry enough seed for about 8 to 10 acres at a time. With the hills of northeast Iowa, there are not enough flat gravel roads to accommodate the plane so they would have to return to the airport to reload. In an area where the planes could easily land, the cost is approximately $10/ac. for the seeding which is comparable to the cost of drilling.

The weather in September, immediately following seeding, was warm and moist allowing for some good growth. October ended up being the coldest in 88 years, not allowing for good growth. There was, however, good enough oats and cereal rye growth to establish a satisfactory ground cover to reduce erosion. There was not good enough growth to create adequate forage for grazing or chopping. Dan Byrnes intends to use his cover crop areas for spring calving. "I think I've got good cover for this spring. There will be enough so the calves won't be born on mud and that's what I was looking for," Byrnes said.

Byrnes also conducted small plot trials to determine if there was any advantage to disking prior to drilling. "I don't see any difference in the disked areas over the no-tilled areas on silage ground," Byrnes said. "I don't think I'll disk anything prior to drilling in the future. Even my old drill went through real well and I have a good stand."

The only disappointing cover was the annual rye grass. Jim Ranum, grassland specialist for Natural Resource Conservation Service (NRCS), said the cool October was partly responsible for the poor stand. "It will take off again in late April or May, but this is probably too late for good cover." He added that a producer would have to seed ryegrass really heavy to produce good cover and at that point it's too cost prohibitive.

Ranum feels that the cheapest, best option, may be bin run oats. He said "There is no need to kill it in the spring and the seed cost is minimal."

Brian Lange, Extension Crop Production Specialist, felt that the best cover was the cereal rye. "It had the best stand and was the most vigorous." Lange said. He added that it will continue to grow next spring and may provide forage at that time.

Lange warned that there are some disadvantages to the cereal rye for a cover crop. He said that there is an alleopathic effect from the rye that consistently reduces corn yield. While trials vary, there may be a 10 to 20 percent reduction from the rye. There is no yield reduction if the rye is followed by soybeans.

Another disadvantage to the cereal rye is that it needs to be either chemically or mechanically killed in the spring. Some producers do not like using chemicals and a mechanical killing, by chiseling or plowing, may lead to erosion.

"The cereal rye will also be nice and green in the spring and may act as an attractant to army worms. This isn't typically a big problem and would probably only be in small areas, not the whole field." Lange said.

The pack manure did not reduce the cover crop stand and in fact may have enhanced it. LuAnn Rolling, NRCS District Conservationist for Allamakee County, said she was afraid the pack manure was so thick it would prevent the cover crop from emerging. In some spots it was up to 4 inches thick. Rolling said "There were some areas where you could follow the wheel track from the manure spreader." She felt that while the stand was reduced in the track, it was still adequate for erosion control. "The areas that got manure appeared to be greener and thicker than the rest of the field," she added.

The Allamakee District conducted a field day on November 1st. It was a very cold day and farmers were still harvesting so attendance was not as large as expected. Those in attendance viewed all three sites. Comments were generally good.